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THE NORTHERNMOST STATION OF MAGNOLIA VIRGINIANA, ITS HISTORY AND PRESENT STATUS

STUART K. HARRIS

The most northern station of *Magnolia virginiana* L. is located in the town of Magnolia situated on the mainland of Cape Ann and in the township of Gloucester, Essex County, Massachusetts. The nearest known station to the South is on Long Island, New York. The presence of the plant in Massachusetts has elicited a great deal of interest since the time of its discovery and a number of articles have been written concerning the history and condition of the plants at this station. The best historical account of the species was published in 1916 by Dr. George G. Kennedy in RHODORA vol. 18. In 1928 Richard J. Eaton reported on the status of the species in RHODORA vol. 30. Because over thirty years have elapsed since the appearance of Mr. Eaton's article it seems time to review once more the past history of the Sweet Bay in Massachusetts and report on its present condition. Much of the historical data has been taken either directly from Dr. Kennedy's paper or from the references given in that paper.

In the past there was confusion as to who discovered the Sweet Bay and when it was discovered. John Robinson in his Flora of Essex County, Massachusetts (1880) states, "First brought to notice by Rev. Manassah Cutler during the last century." Prof. John G. Jack (1889) says, "Here it has been known for over a hundred years, having been first brought to notice by the Rev. Manasseh Cutler." Mr. T. Otis Fuller (1890) quotes a marginal

note made by Judge John Davis of Boston in his copy of the first edition of Bigelow's Florula Bostoniensis (1814) to the effect that the first specimen was obtained by Chief Justice Parsons in the summer of 1805. None of these is correct as to the date of the discovery.

In volume two of Cutler and Cutler's Life Journals and Correspondence of Rev. Manasseh Cutler, LL.D. (1888) is information which leaves no doubt as to the discovery. The magnolia was first noticed on Tuesday 22 July 1806 by Chief Justice Theophilus Parsons while riding through the woods in Gloucester during a shower of rain! I regret I have been unable to ascertain whether it was in the morning or the afternoon. Specimens were collected by him on the following Friday. He promptly wrote a letter to the Rev. Manasseh Cutler, the outstanding botanist in Essex County at the time, who set out in search of the plant on Monday, July 28, the day after he received the letter. While having dinner with Captain Ingolson at Kettle Cove a Mr. Goldsmith brought in specimens of the magnolia without being aware that Rev. Cutler was looking for it. In the afternoon Cutler found that the plant was abundant in two swamps close to the road from Manchester to Gloucester.

Being more familiar with *Magnolia stellata* and *M. soulangeana* which blossom in the spring, the last half of July seemed a late date to me to find magnolia in flower. However, in checking all the dated specimens I have seen, all collections bearing blossoms have been taken in July and Jack says that the first week in July is the best time to go and see the shrubs.

A note by an unsigned correspondent appears on page 612 of Garden and Forest vol. 2 and again as a quotation in Kennedy's article suggesting that *Magnolia virginiana* is not really native to Gloucester but was introduced there from a more southern state by the early settlers. As far as I know there is not a shred of evidence to support this interesting theory. This note is the major portion of a letter dated 21 November 1889 and sent to John Robinson at the Peabody Academy of Science at Salem by M. A. Walton, "Hermit." This letter is attached to one of the sheets

of Magnolia in the herbarium of the Peabody Museum of Salem. Mason A. Walton, the Hermit of Gloucester, was suffering from very poor health and about 1884 decided that continued life in the city would soon prove fatal, so he moved to the woods of Cape Ann and lived first in a tent and later in a cabin and nursed himself back to health. He was an untrained nature lover with a keen eye, as is evidenced by the contents of this letter and by the book he published in 1903, A Hermit's Wild Friends, which is full of observations he made of the plants, birds and mammals of the region.

The note in Garden and Forest terminates as follows, "It must be evident to any careful observer that Magnolia glauca is here struggling in an unnatural climate. The primary roots grow straight down into the muck and in the fall are thickly covered with succulent rootlets, snowy white in color. In the spring these rootlets are mostly dead, and the greater part of the young shoots die down to the moss, and a certain per cent of the old plants winter kill, which goes to show that there is no harmony between shrub and climate." There is more pertinent information in the unpublished portion of the letter. "Magnolia glauca, does not extend into Essex, so far as I know. I have traveled through many of the swamps of that town without discovering it, and persistent enquiry of Essex people, long ago convinced me that it did not extend beyond West Gloucester. I believe the shrub is confined wholly to Ward 8, City of Gloucester. Below I give the names of some of the swamps where it grows: 'Magnolia Swamp'; 'Barrel Swamp'; 'Rust's Swamp'; 'Cedar Swamp'; 'Bray's Swamp' and several other minor swamps. During the time I have lived here, five years, Magnolia glauca has increased in Magnolia Swamp. I do not think it has noticeably increased in other swamps, but certainly, it has not decreased."

This brings us to a consideration of the range of *Magnolia virginiana* in New England. In the Trees and Shrubs of Massachetts, ed. 2 (1875), George B. Emerson states, "It is said to have been found, in a single spot, in the county of York, Maine." Since no specimen is known to support this claim and no botanist

has reported finding the Sweet Bay in Maine since 1875, this report can be eliminated. Thus the range can be confined to Cape Ann, Massachusetts. Emerson (1846) reports it from a swamp in deep woods in Essex but there are no specimens to substantiate the claim. Walton, as noted above, believed that the species grew only in West Gloucester and I think this is essentially correct. However, there are two collections in the Gray Herbarium, one made by William Oakes and the other by Charles E. Faxon, which give the adjoining town of Manchester as the locality.

The location of the Magnolia Swamp became well-known soon after its discovery and great numbers of the magnolia were dug and moved to private gardens. During the season when the shrub was in flower large numbers of the blossoms were picked, with little or no regard for the welfare of the plants, and sold on the streets of Salem and Boston. In the herbarium of the Peabody Museum are two sheets of blossoms purchased from small boys in 1878 and 1879. As early as 1846, Emerson expressed the fear that the station would soon become extirpated but nothing was done to remedy the situation. Kennedy quotes a letter written in 1916 by Charles E. Faxon to Walter Deane which states that forty-five years before he had found plenty of good specimens fifteen feet tall or more and that it was easy to find them because the boys who sold the flowers on the Boston trains had made trails from one plant to another all over the swamp. However, when he visited the place two years previously (July 1913) in the company of Dr. Kennedy and the local Tree Warden, they could find only two little plants a few feet high. This must have been the low point of the stand. It is possible that they happened to make their visit at a time when most of the plants had been killed back to the ground by a severe winter and the young shoots had not yet appeared.

Eaton in 1928 notes that the Magnolia Swamp had been made a part of Ravenswood Park in the early 1920's and that the magnolia was at last protected. Along the paths constructed across the swamp he saw about a dozen species. In talking with him

recently he told me that he has counted over twenty-five plants close to the paths.

All my visits to Magnolia Swamp have been made in the winter which is not as illogical as it first seems because the ground is then frozen and progress is easy in the swamp and the magnolias being evergreens are easy to spot because they are about the only woody plants there holding their leaves. Besides I would rather fight chilblains than mosquitoes. As Walton states the swamp contains several hundred acres and is long and relatively narrow, ten to over one hundred rods wide. In late February of this year I made a rough census of the distinct plants seen during twenty or twenty-five zigs and zags across the swamp. I was able to count eighty clones and I am sure that I missed some so that it is probably safe to say that at least one hundred still exist. The length of the stems varied from less than a foot to about fifteen feet. I saw no evidence of fruit on any of the plants and this was also true on two previous visits made during the past seven years. This leads me to wonder if the magnolias are now being killed by kindness through being shaded out by the red maples and other taller trees in the swamp which are also being protected. In the fall of 1957, Miss Frances L. Burnett of Manchester told me of another apparently natural stand of *Magnolia virginiana* in a swamp near the Manchester line and at least a mile and one half from the Magnolia Swamp. I have visited this twice. The swamp itself is small and contains only five or six plants but these represent the only wild magnolias outside of Magnolia Swamp of which I am aware. In 1957, I found several fruit on this group but I saw none this February. — DEPARTMENT OF BIOLOGY, BOSTON UNIVERSITY, BOSTON, MASS.

Literature Cited

Cutler, W. P. & J.P. Cutler. 1888. Life Journals and Correspondence of Rev. Manasseh Cutler, LL.D. 2:310, 311.

Eaton, R. J. 1928. The Present Status of Magnolia virginiana in Massachusetts. Rhodora 30:207, 208.

Emerson, G. B. 1846. Trees and Shrubs of Massachusetts, ed. 1. 527.

Emerson, G. B. 1875. Trees and Shrubs of Massachusetts, ed. 2. 603.

FULLER, T. O. 1890. Magnolia glauca in Massachusetts. Garden and Forest 3:23.

JACK, J. G. 1889. Magnolia glauca in Its Northern Home. Garden and Forest 2:363, 364.

KENNEDY, G. G. 1916. Some Historical Data Regarding the Sweet Bay and Its Station on Cape Ann. RHODORA 18:205–212.

WALTON, M. A. 1889. Note on Magnolia glauca. Garden and Forest 2:612.

ALLIUM SPECULAE, A NEW SPECIES OF THE ALLIUM CANADENSE ALLIANCE FROM ALABAMA[1]

MARION OWNBEY AND HANNAH C. AASE

The *Allium canadense* alliance comprising ten North American species has recently been revised by the authors.[2] Scarcely was this monograph off the press than there appeared in our living collection an undoubted eleventh member of this group. We are indebted to Dr. Carroll E. Wood, Jr., for supplying bulbs and later herbarium specimens of this novelty which we describe below.

Allium speculae, sp. nov. Bulbus ovoideus non bulbuliferens saepe unus ex pugno, tunicis interioribus albidis, cellulis cuticulae indistinctis recte elongatis regularibus, tunicis exterioribus fuscis persistentibus anguste fibroso-recticulatis, maculis vacuis; foliis aliquot canaliculatis in sectione transversa concavo-convexis 1–2 mm. latis integris scapo brevioribus in flore viridibus; scapo uno tereti 2–3 dm. alto; spatha membranacea caudata, bracteis plerumque tribus lanceolatis attenuatis plusminusve connatis plerumque uninervatis; umbella pauci (10–15–) flora erecta, pedicellis tenuibus demum subaequilongis, perianthio plerumque 2–3–plo longioribus; perianthii segmentis 5–6 mm. longis ellipticis obtusis ad apicem involutis pallide roseis late patentibus non valde reflexis in fructu marcescentibus super ovarium conniventibus; staminibus perianthii segmentis paulo brevioribus ascendentibus, filamentis subulatis basi dilatatis coalitisque, antheris oblongis obtusis versatilibus; ovario turbinato trilobato 6-caniculato distincte cristato, cristae processis

[1] This investigation was supported in part by funds provided for biological and medical research by State of Washington Initiative Measure No. 171.

[2] OWNBY, M., AND H. C. AASE. 1956. Cytotaxonomic Studies in *Allium*. I. The *Allium canadense* alliance. Research Studies of the State College of Washington. Monographic Supplement, No. 1. 106 pp.

6 binis complanatis horizontalibus, stylo lineari filamentis subaequilongo, stigmate capitato; seminibus ignotis; $2n = 14$.

Bulb ovoid, without basal bulbets, often one of a cluster, inner coats whitish, with the epidermal cells indistinct, vertically elongate and regular or nearly so, outer coats persisting as a series of grayish or brownish very fine meshed open recticula, usually enclosing only a single bulb; leaves several per bulb, channeled, concave-convex in cross section, 1–2 mm. broad, entire, shorter than the scape, green at anthesis; scape 2–3 dm. tall, terete, solitary (or sometimes a second one appearing in cultivated plants); spathe membranaceous, caudate, breaking at anthesis into usually 3, lanceolate, attenuate, partially united, mostly 1-nerved bracts; umbel comparatively few (10–15) — flowered, erect, pedicels slender, becoming subequal in length, mostly 2–3 times that of the perianth; perianth segments 5–6 mm. long, elliptic, obtuse, involute at apex, pinkish, widely spreading, but not strongly reflexed, remaining thin and withering over the ovary; stamens a little shorter than the perianth, ascending, filaments subulate, dilated and united into a ring at the base, anthers oblong, obtuse, versatile; ovary turbinate, 3-lobed, but 6-grooved, each lobe with a pair of flattened horizontal processes which together form the distinct crest; style linear, about as long as the filaments, stigma capitate; seeds unknown; $2n = 14$.

The type specimen (WS) was collected in bud April 25, 1955, in black sandy soil (wet at this season) with *Schoenolirion croceum* on an open expanse of flat sandstone surrounded by *Pinus-Quercus-Carya* woods at the northwest rim of Little River Canyon, about 1.3 miles from the northeast end of Little River Canyon Parkway, Lookout Mountain, southeast of Fort Payne, De Kalb County, Alabama, by Carroll E. Wood, Jr. (No. 8695). The plants were allowed to flower, and specimens prepared May 4. A selected isotype is in the Gray Herbarium. Additional data were obtained from plants of this collection (WS) grown in the greenhouse at Pullman, Washington, in 1956. The species is abundant at the type locality, and several isotypes obtained remain to be distributed by the collector. In cultivation, the plants did not survive beyond the first year.

Allium speculae habitally resembles the widespread *A. canadense* var. *mobilense* of the Gulf states, and if it has been collected before the specimens will probably be found under this name or one of its synonyms. It differs from var. *mobilense*, however, in its prominently crested ovaries, its mostly 1-nerved bracts,

and its more widely spreading perianth segments. Its nearest relationship is probably not with that variety and, if this is true, it has no close relatives. The only other species of this alliance with crested ovaries in eastern North America is *A. Cuthbertii*, which is at once so conspicuously distinct from *A. speculae* that they could not be confused. *A. Cuthbertii* has only two leaves per scape, the processes of the conspicuous crest are contorted, the perianth segments reflexed, and the bracts mostly 5-nerved. Yet, *A. Cuthbertii* seems to be the closest relative of *A. speculae*. Among the western species of this alliance, only *A. Geyeri* seems to be a possible relative. This species, however, has urceolate-campanulate flowers, and the procesess of the crest are little more than inconspicuous knobs. The relationship with *A. Geyeri* cannot be close. It seems, therefore, that *A. speculae* represents an eleventh distinct evolutionary line in the *A. canadense* alliance, or that it stands ancestral to *A. Cuthbertii*. The later hypothesis is particularly appealing. Morphologically, *A. speculae* is intermediate between *A. Cuthbertii* and the less specialized western species, such as *A. Geyeri*. Furthermore, its present distribution fits this hypothesis, inasmuch as it is apparent that the *A. canadense* alliance as a whole radiated from the Southwest. One cannot overlook, however, some resemblance between *A. Cuthbertii* and *A. Plummerae* and the possibility that the latter, although tetraploid, might be the most primative surviving member of the alliance. This might imply an early separation of the lines which gave rise to *A. speculae* and *A. Cuthbertii*, respectively, so that the former could not stand as ancestral to the latter.

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AN ALTERNATIVE EXPLANATION OF SUBSPECIATION IN ASCLEPIAS TUBEROSA

C. W. James

Asclepias tuberosa L. (Woodson, 1954) is represented in the southeastern United States by a relatively extensive Appalachian subspecies and a somewhat more restricted Coastal Plain repre-

sentative, a relationship which has been observed repeatedly in many species and genera for some time. It is easily conceived how many such Coastal Plain forms could have originated from Appalachian species some time after the close of the Cretaceous and differentiated in response to ecogeographical factors present in the newly emerging Coastal Plain. However, in such instances, unless isolating mechanisms other than those of ecogeographical character have since become established or unless the ecological barrier is sharply delimited, intergradation is expected between such forms. Yet, Woodson's (1947b) detailed statistical analyses of leaf variation in *Asclepias tuberosa* revealed that this intergrading zone presently evident between the Coastal Plain subsp. *Rolfsii* and the Appalachian subsp. *tuberosa* is due to hybridization between the two subspecies and not to an ecogeographical differentiation into a cline. This led Woodson (1947a) to conclude that *Rolfsii* must have originated independently in more or less complete isolation from *tuberosa*. To account for this, Woodson then postulated that *Rolfsii* evolved on Orange Island, a hypothetical island or archipelago in north Florida during Oligocene times. Since Woodson's account of the supposed origin of *Rolfsii* has been considered biological evidence substantiating the existence of a functioning Orange Island Refugium by Woodson, Thorne (1949), and others, it seems highly desirable to explore other ways in which this subspecies could have originated lest we find ourselves relying too freely and perhaps unjustifiably at times on this Island as a refugium.

Granted the occurrence of hybridization between the subspecies of *Asclepias tuberosa*, how then can one account for this apparently independent origin of *Rolfsii* by means of the known processes of ecogeographical subspeciation? As Woodson pointed out, "*Rolfsii*, surely, could not have maintained a separate existence with *tuberosa* upon the Appalachian upland, later migrating to Florida only to return in panmixy with its sister subspecies."

The Coastal Plain today is a geographical province differing considerably from the adjacent and generally more mesic Pied-

mont and Appalachian provinces. Since the habitats of the Coastal Plain presumably developed gradually through a successional series over a period of time, it seems reasonable to assume that these differences (notably the edaphic ones) could only have been more striking when the Coastal Plain was in its initial phase of exposure. This would mean that the genetic system of the pioneering Coastal Plain element of *tuberosa* would have been selected under much more rigorous and quite different conditions from those prevailing today. It possibly required considerable time for a genetic system to evolve from the parental species which was sufficiently adapted to be aggressive in this newly available environmental complex. But once such biotypes had evolved, they could migrate southward as rapidly as the successional stages and dispersal would permit since environments characteristic of the succeeding portions of the Coastal Plain would be very similar to the first to which the invading element must necessarily have been adapted. The rapidity with which this genetic element migrated away from the parental stock would result in a progressively more effective geographical isolation, thus accounting for the apparently independent evolution of *Rolfsii* in more or less complete isolation. (Although not the case in *Rolfsii*, this could provide conditions facilitating the evolution of other isolating mechanisms). The basis of the reasoning employed here is dependent upon the following tenets:

The less favorable a newly available area is for occupancy and invasion by organisms of an adjacent area,

1. the less the probability of the presence of existing biotypes which can immediately invade the new area,
2. the greater the difference there will be in the genosystem of a derived race which can invade the new area,
3. the greater the probability of a longer period of time required for the evolution of this genosystem,
4. the greater the differential in rate of migration between the best adapted and the least adapted biotypes of this genosystem,
5. the greater the degree of morphological and physiological differentiation and/or specialization of the invading race,
6. the greater the effectiveness of ecogeographical isolation (if such isolating mechanisms are involved.)

7. the longer the newly evolved race can maintain a separate identity from the parental species.

The genetic system of *Rolfsii* is presumably a specialized one derived from only a part of the broader genetic system of *tuberosa*, and one which, perhaps, has become even further specialized. There would then be little or no pressure on a northward movement of *Rolfsii* genes into *tuberosa*. There would be, however, continued forces operating at the juncture of subspecific differentiation on a flow of *tuberosa* genes southward just as there had been since the time of exposure of the Coastal Plain. Furthermore, as the Coastal Plain became more mature it offered more variety and less severity in habitat; consequently, many *tuberosa* genes and gene complexes which previously were insufficiently adapted to that environment could then flow southward in addition to some of the previous ones. This would result in an invasion of the Coastal Plain *Rolfsii* by increasingly less differentiated biotypes of *tuberosa* which could then hybridize with the remaining *Rolfsii* element in that area of the Coastal Plain where subspeciation was first initiated. This progression of secondary invasion elements of *tuberosa* would then tend to absorb *Rolfsii* and could then account for the present hybridization occurring between the two subspecies.

If *Rolfsii* were ever present in the Carolinas and northward it has apparently since been absorbed by *tuberosa*. It is of interest to note in this connection that geological evidence suggests that a considerable portion of the Carolina Coastal Plain has been exposed and available to plants since the end of the Cretaceous. At the present time, *Rolfsii* appears to be losing its identity throughout the remainder of the Coastal Plain with the exception of peninsular Florida which is farthest from the presumed point of origin.

This analysis, of course, does not disprove the possible existence of an Orange Island Refugium. It is merely an attempt to offer an alternative explanation of subspeciation in *Asclepias tuberosa* which could account for the hybridization presently occurring between the subspecies without having to rely on an Orange Island Refugium.

The author expresses his appreciation to Drs. R. E. Woodson, R. C. Rollins, J. J. Westfall, and C. E. Wood for reading and evaluating the manuscript.

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LITERATURE CITED

THORNE, R. F. 1949. Inland plants on the Gulf Coastal Plain of Georgia. Castanea **14**: 88–97.

WOODSON, R. E. 1947a. Notes on the "Historical Factor" in plant geography. Contr. Gray Herb. **165**: 12–25.

————. 1947b. Some dynamics of leaf variation in *Asclepias tuberosa*. Ann. Mo. Bot. Gard. **34**: 353–432.

————. 1954. The North American species of *Asclepias* L. Ann. Mo. Bot. Gard. **41**: 1–211.

NOTES ON THE DISTRIBUTION OF OHIO COMPOSITAE: II. EUPATORIEAE, SENECIONEAE, CYNAREAE, CICHORIEAE

ROBERT W. LONG

This is the second paper of a series of three that presents some results of a recent study of Ohio Compositae. In part I[1] it was noted that plants discussed in these reports are ones whose occurrence in Ohio is questionable, judging from information given in Gray's Manual (1950) and The New Britton and Brown Illustrated Flora (1952). For the present, the nomenclature is derived chiefly from Gray's Manual, but this does not imply it is necessarily the best treatment for the taxa listed.

All specimens and county records cited here are deposited in the Herbarium of The Ohio State University, and the identifications have been verified by the writer.

EUPATORIEAE

Eupatorium album L. var. **glandulosum** (Michx.) DC. This variety is easily separated from the typical one by the occurrence of minute, dark glands on the phyllaries; thus, the variety is quite distinct. Its presence in southern Ohio represents a northward extension of the range given by Fernald. COLLECTION DATA: Jackson Co., Liberty Twp.,

ROBERT W. LONG. Notes on the distribution of Ohio Compositae: I. Heliantheae, Anthemidae. RHODORA 60:125-128. 1958.

Big Rock, *Leslie Pontius and Floyd Bartley*, August 27, 1933. Other collections from Scioto County.

Eupatorium rotundifolium L. var. **rotundifolium.** The distribution of this plant is apparently limited to the southeastern quarter of the state on the Allegheny Plateau. These collections, however, are evidently from the northwestern edge of the range for the species, judging from accounts in the manuals. COLLECTION DATA: Scioto Co., Nile Twp., *Conrad Roth*, August 26, 1956. Other collections examined from Fairfield and Hocking counties.

Eupatorium rotundifolium L. var. **ovatum** (Bigel.) Torr. That there are two recognizable varieties of this species in Ohio is clearly apparent from the specimens examined. Both manuals agree that two can be distinguished, with *E. pubescens* Muhl. being a synonym for var. *ovatum*. Recent collections place both varieties in southcentral counties and for var. *ovatum* this record will be a range extension. COLLECTION DATA: Hocking Co., "Neotoma", *Gareth Gilbert*, August 12, 1955. Also, collections from Jackson County.

Liatris borealis Nutt. The collections of this plant are very near *L. scariosa* (L.) Willd. If they are correctly identified, then Ohio records constitute a westward range extension. The following are provisionally placed in this species. COLLECTION DATA: Adams Co., Andrews School Prairie, *H. R. DeSelm*, September 18, 1952. Other county records for Erie, Henry, Pike, Ross, and Wood counties.

Liatris punctata Hook. The single collection suggests that the species occurs only rarely. This is considerably east of its chief distribution, that being in the dry prairies from Canada to Texas. The specimen does not appear to be of var. *nebraskana* Gaiser. COLLECTION DATA: Franklin Co., Clintonville, *John H. Schaffner*, October 3, 1903.

Liatris scariosa (L.) Willd. Ohio plants appear to be relatively abundant, but predominantly in the southern counties which extends the range of the species westward. Intergrades to *L. borealis*, and *L. aspera* Michx. were found. The following collections have been provisionally traced to *L. scariosa* as described in Gray's Manual. COLLECTION DATA: Vinton Co., Vinton Twp., Sec. 22, roadside on ridgetop, *Janice Beatley*, August 30, 1952. Other collections from Adams, Athens, Erie, Fairfield, Franklin, Fulton, Jackson, Meigs, Perry, Pike, Ross, and Scioto counties.

SENECIONEAE

Senecio antennariifolius Britt. The presence of this species in Ohio is a significant westward range extension from the general area of distribution, as given in both manuals. Schaffner does not give it in either the Revised Catalogue or in The Field Manual of the Flora of Ohio. All collections examined had been made since 1950. Three collections

intergrade to *S. plattensis* Nutt. COLLECTION DATA: Hocking Co., Cedar Falls, *Floyd Bartley and Lawrence E. Hicks,* June, 1956.

Senecio Smallii Britt. Although this is a southern species, ranging into Kentucky and Pennsylvania, collections have been seen from several parts of the state. Possibly the species has migrated only recenlty into Ohio, or has been introduced as a weed. Schaffner does not list it and all collections examined were made since 1949. One specimen (Geauga Co.) intergrades to *S. pauperculus* Michx. in stem and inflorescence characteristics. COLLECTION DATA: Lawrence Co., in old field 2 mi. west of Oak Ridge Furnace, *Lawrence Hicks and Floyd Bartley,* May 30, 1954. Also, specimens were examined from Adams, Cuyahoga, Geauga and Summit counties.

CYNAREAE

Centaurea repens L. This is a distinctive star-thistle, with bushy branches bearing small, linear leaves abundant to the numerous heads that terminate the branches. It is represented in Ohio by at least a single collection and this is an important eastward range extension. COLLECTION DATA: Clinton Co., collected along railroad tracks near New Vienna, a large patch, *Katie M. Roads,* June 27, 1939.

Cirsium arvense (L.) Scop. var **integrifolium** Wimm. and Grab. Two collections have been made in widely-separated parts of the state. According to published accounts, these locales are considerably west and south of the usual range for the variety. COLLECTION DATA: Cuyahoga Co., North Olmstead, *Freda Detmers,* August 4, 1925. Also, a collection was seen from Logan county.

Cirsium carolinianum (Walt.) Fern. and Schub. The omission of this species from Schaffner's published accounts of the flora was owing to his identification of Ohio collections as *C. virginianum* (L.) Michx. The specimens seen, however, clearly belong to *C. carolinianum* judging from the size of the involucre and number of leaves. Two county records extend the range of the species into central Ohio. COLLECTION DATA: Pike Co., *Floyd Bartley and Leslie Pontius,* June 7, 1945. Other collections examined from Franklin, Madison, and Scioto counties.

Cirsium Hillii (Canby) Fern. This species is distinguished from the common Ohio thistle *C. pumilum* (Nutt.) Spreng. by the presence of short prickles on the outer phyllaries that also have a dark band present running the length of the phyllary. Schaffner includes it in his Field Manual of the Flora of Ohio, but not in the Revised Catalogue. The single head of the specimen examined was unusually large. COLLECTION DATA: Coshocton Co., in dry open fields, leaves green beneath, location N. A. E. W., *Harold N. Moldenke 13232,* July 15, 1942.

CICHORIEAE

Krigia Dandelion (L.) Nutt. Ohio records result in a northward and eastward range extension. The single collection, however, comes from

an area that several authors have commented on as being a peculiar mosaic of prairie and Allegheny vegetation which is not typical for the state. The specimen appeared not unusual, morphologically, judging from the description. COLLECTION DATA: Adams Co., sw. corner Oliver Twp., post oak-white oak woods, *E. Lucy Braun*, May 18, 1954.

Leontodon autumnalis L. var. **autumnalis.** The plant has become established as a weed of northern counties, and its occurrence represents an eastward and southward range extension. COLLECTION DATA: Summit Co., lawn weed, Cannon road ¾ mi. e. of Twinsburg, *Ervin M. Herrick*, August 28, 1955. Other specimens examined from Ashtabula, Franklin, Lake, and Medina counties.

Leontodon autumnalis var. **pratensis** (Link) Koch. A single collection was seen of this variety, although one might expect to find it to be more abundant, especially in the northern part of the state. COLLECTION DATA: Ashtabula Co., Trumbull, *L. E. Hicks*, June 10, 1931.— DEPARTMENT OF BOTANY, OHIO WESLEYAN UNIVERSITY, DELAWARE, OHIO.

THE BALANOPHORACEAE IN THE CARIBBEAN FLORA[1]

RICHARD A. HOWARD

This small family of root parasites is represented in the Antilles by two genera, *Scybalium* and *Helosis*. One species of *Scybalium*, *S. jamaicense*, has been found in Cuba, Jamaica, Hispaniola and Puerto Rico.

The second genus, *Helosis*, consists of three species known from South America and Central America. Sandwith (Kew Bull. 1931:59. 1931.) and Harms in his monograph (Pflanzenfam. 2nd ed. 16b:321. 1935.) suggest that one of them, *H. cayennensis*, may possibly occur in Guatemala and Cuba as well as in northern South America. Standley and Steyermark (Flora of Guatemala, Fieldiana, Bot. 24:93. 1946.) refer the Guatemalan specimens to *Helosis mexicana*, but state that "three species have been described, all of them perhaps to be reduced to *H. cayennensis* (Swartz) Spreng. of northern South America. Only the following [*H. mexicana*] is known from Central America." The specific differences suggested by Harms for the three species of *Helosis* do not appear to be substantial taxonomic characters. However,

[1] Work on the flora of the Lesser Antilles is supported by a grant from the National Science Foundation.

as a group, the plants have been poorly collected and have not received careful comparative study for taxonomic classification.

The earliest record of *Helosis* from the West Indies appears in Grisebach, Flora British West Indies (309. 1860.), when he reports *Helosis guianensis* from Trinidad. In his Catalogue Plantarum Cubensium (118. 1866.) Grisebach lists "*Helosis mexicana* Liebm.", citing the Charles Wright collection 2636 (GH). This plant has not been recollected. Leon and Alain (Flora de Cuba 2:84. 1951.) change this identification to *Helosis guianensis* L. C. Rich. Two additional collections of *Helosis* from the Lesser Antilles are now on hand, and allow further consideration of this peculiar root parasite.

Dr. Walter Hodge, in the course of his field work in Dominica, received a report that Helosis was "quite abundant on Morne Anglais". He did not personally encounter the plant, but received a specimen from Mrs. Alastair Forbes collected on the banks of the Laurent River near the western base of Morne Negre Maron (*Hodge 1206*, GH). This specimen has been unidentified since 1940. More recently, Mr. George Proctor made an excellent collection (*Proctor 17764*, GH), including material preserved in alcohol, from the mossy montane forest between 2500 and 3000 feet on the northwest spur of Morne Gimie in St. Lucia.

The three collections from the West Indies can now be examined together and compared with material from South and Central America. All specimens are small, with nearly globular heads. None exceeds 5 cm. in height in mature condition. The heads range from 1–2 cm. in length and 1–1.5 cm. in thickness. The deciduous hexagonal scales of the anthophore are only 1.5–2 mm. in diameter, and the apex is extended in a setaceous tip. Both male and female flowers are borne in the head. The pistillate flowers remain smaller than the abundant paleae, with only the styles protruding. The bilabiate perianth is represented by two triangular appendages, 0.1–0.2 mm. long. The perianth of the staminate flowers is well developed by contrast with a tube 2.5 mm. long and three ovate lobes 1.5 mm. in length. The perianth lobes are valvate and strongly concave. The three filaments

are stout but cylindrical, and in specimens preserved in alcohol these are free throughout their length. The short anthers, however, are completely connate.

This description agrees in the main with the excellent diagnosis given by Sandwith for *Helosis cayennensis* (Kew Bull. 1931: 58–9. 1931.). It differs in the smaller size of all parts and in the description of the free filaments.

In a key by Leon and Alain *Scybalium* is distinguished from *Helosis* by the former genus having three stamens and the latter two. Standley and Steyermark also describe the staminate flower as having two stamens. Both of these pairs of workers refer to fused filaments. Apparently their descriptions have been based on dried herbarium material where the filaments seem to adhere tightly. The report of only two stamens is apparently an error, for a reëxamination of the Wright collection from Cuba and of several specimens from Central America reveals three stamens in all specimens.

The West Indian specimens are referred to *Helosis cayennensis* (Sw.) Spreng. *Helosis guianensis* L. C. Rich. is regarded by Harms and Sandwith as a synonym. All the West Indian material is of smaller size, has longer setaceous tips to the hexagonal scales of the head, and a more obvious bilabiate development of the perianth of the pistillate flowers. Until additional collections are available from the Lesser Antilles and from Cuba it is not worth while to use these minute characters in an obviously reduced and specialized plant as distinctions for a new species.

While Harms uses ovule characteristics to distinguish between *Scybalium* and *Helosis*, the single species of each in the West Indies can be separated on the basis of the numerous overlapping scales of the peduncle of *Scybalium* and the naked peduncle of *Helosis* which may have a single annulus of short but broad scales. The bracts of the flower head of *Scybalium* are broadly triangular, flat and imbricated, while those of *Helosis* are peltate, hexagonal in outline, valvate, and extended to a setaceous tip.

— ARNOLD ARBORETUM, HARVARD UNIVERSITY.

NEW NAMES WITHIN THE SECTION TRIDENTATAE OF ARTEMISIA[1]

ALAN A. BEETLE

A study of the ecotypes of big sagebrush and its relatives was made over a three-year period in the eleven western states as well as in adjacent portions of Mexico and Canada. Comparison of morphological characteristics, ecological development, and distribution of species has resulted in the discovery of one new subspecies and two new species within Section *Tridentatae* Rydb. of Artemisia. All of the types will be treated in detail in a forthcoming Wyoming Agricultural Experiment Station bulletin.

While the use of *Seriphidium* for a subgenus grouping involving both Old World and New World types (having homogamous heads) may yet have to be proved natural, there is much evidence that the use of Section Tridentatae Rydberg embodies a closely knit group of species endemic to the North American continent. These species may be outlined as follows:

1. **A. bigelovii** Gray (*A. petrophila* Wooton & Standley)
2. **A. nova** Nelson
3. **A. pygmaea** Gray
4. **A. rigida** Gray
5. **A. tripartita** Gray (*A. trifida* Nutt.)

5 (a). **A tripartita** subsp. **rupicola** Beetle, subsp. nov. Affinis **A. tripartita** subsp. *tripartita* sed nana, ad 1–1.5 dm. alta, foliis ad 3 cm. longis, singuli parte 1 mm. lata.

Type collection: Wyoming, Albany County, Medicine Bow National Forest, Pole Mt., Sept. 7, 1958, *A. A. Beetle 13185*. TYPE in the Rocky Mountain Herbarium; duplicates in Gray Herbarium, Chicago Natural History Museum, U. S. National Herbarium, and the herbarium of the University of California, Berkeley.

A. tripartita subsp. *rupicola* is a dwarf plant rarely over 1.5 dm. tall. Its leaves are often 3 cm. long, with both the basal portion and each lobe at least 1 mm. wide. In contrast *A. tripartita* subsp. *tripartita* is an erect plant up to two meters tall, with leaves seldom over 2 cm. long, both the basal portion and each of the three lobes about 0.50 to 0.75 mm. wide. *A. tripartita* subsp. *rupicola* occupies rocky knolls from 8,000 to 9,000 feet elevation

[1] Published with approval of the director, Wyoming Agricultural Experiment Station, as Journal paper no. 126.

from the Owl Creek Mountains and from South Pass in Central Wyoming to the Laramie Range in southeastern Wyoming. *A. tripartita* subsp. *tripartita* occupies the deeper soils at the base of foothills from 5,000 to 7,000 feet elevation and occurs from southern British Columbia, Canada, southward through Washington, Idaho, and Montana to western Wyoming and northern Utah.

6. **A. tridentata** Nutt.

6(a). **A. tridentata** subsp. **vaseyana** (Rydb.) Beetle, comb. nov.

Based on *A. vaseyana* Rydb. North American Flora 34 (3):283. 1916.

A. tridentata subsp. *vaseyana* has a range geographically distinct from that of *A. tridentata* subsp. *tridentata*. It differs mainly in the characters emphasized by Rydberg, namely broader involucre, more flowers per head, and broader, and more truncate or cuneate leaves.

6(b). **A. tridentata** subsp. **vasyana** (Rydb.) Beetle, f. **spiciformis** (Osterhout) Beetle, comb. nov.

Based on *A. spiciformis* Osterhout, Bull, Torrey Club 27:507. 1900.

This plant is an extreme form, always occurring at the upper elevational limits of the subspecies and always in close proximity of *A. cana* subsp. *viscidula*, leading to the speculation that it may partially represent crossing between *A. tridentata* subsp. *vaseyana* and *A. cana* subsp. *viscidula*.

6(c). **A. tridentata** subsp. **tridentata**, f. **parishii** (Gray) Beetle, comb. nov.

Based on *A. parishii* Gray, Proc. Am. Acad. 17:220. 1882.

While *A. tridentata* subsp. *tridentata* f. *parishii* is an eye-catching form in the field because of its strikingly reflexed branches of the inflorescence (in addition to having somewhat hairy achenes), it occurs sporadically throughout the range of *A. tridentata* subsp. *tridentata* in many more localities than have been reported previously. It has not been reported occurring within the range of *A. tridentata* subsp. *vaseyana*.

7. **A. arbuscula** Nutt.

7(a) **A. arbuscula** subsp. **thermopola** Beetle subsp. nov. Affinis *A. arbuscula*, arbuscula sed planta gracile, cum foliis filiformibus, tripartitis profunde.

Type collection: Wyoming, Teton County, along banks of Snake River near south entrance to Yellowstone National Park, August 10, 1957, *A. A. Beetle 12631*. TYPE in the Rocky Mountain Herbarium.

This is the variation described by Ward (Contrib. from the

Dudley Herbarium *4* (8):180, 1953) as having "deeply trifid leaves" with the exception that its distribution seems to be confined to the area from Yellowstone National Park, Wyoming, south to Salt Lake City, Utah.

8. **A. longiloba** (Osterhout) Beetle, comb. nov.

Based on *A. spiciformis longiloba* Osterhout, Muhlenbergia 4:69. 1908.

While this plant has usually been treated as a part of *A. arbuscula*, it occurs on different sites, preferring the most strongly alkaline and highly impermeable soils. It also blooms approximately a month earlier and morphologically is distinguished by its larger, many-flowered heads.

9. **A. rothrockii** Gray

10. **A. cana** Pursh

10 (a). **A. cana** subsp. **bolanderi** (Gray) Ward

10 (b). **A. cana** subsp. **viscidula** (Osterhout) Beetle, comb. nov.

Based on *A. cana* var. *viscidula* Osterhout, *Bull.* Torrey Club 27:507. 1900. *A. viscidula* (Osterhout) Rydberg. Bull. Torrey Club 33:157. 1906.

This subspecies has a distinct geographical range from *A. cana* subsp. *cana*. It occurs in the high mountain valleys of the Rocky Mountains and is distinguished by the smaller, dark-green leaves, which are frequently asymmetrically lobed.

11. **A. argilosa** Beetle sp. nov. Planta inter *A. cana* subsp. *viscidula* et *A. longiloba* intermedia; rami erecti, ad 1 m. alti; foliis ad 4 cm. longis, tripartitis profunde singuli parte 2–3 mm. lati; florum 5–10, 3.0–3.5 mm. longum; achenium 1.8 longum.
mm. longum; achenium 1.8 mm. longum.

Type collection: Colorado, Jackson County, Coalmont, July 31, 1957, *A. A. Beetle 12872*, TYPE in the Rocky Mountain Herbarium.

This plant has deeply three-lobed leaves, very much of the general appearance of those of *A. tripartita*. They are, however, commonly up to 4 cm. long, and not only the basal portion but each lobe is 2–3 mm. broad. The plants occur on strongly alkaline soil associated with greasewood (*Sarcobatus vermiculatus*) and saltsages (*Atriplex* spp.). The plants are erect in habit and approximately 1 m. tall. All the collections of this plant are from a very limited area in the vicinity of Coalmont. A detailed study of the morphological characters of this plant indicates that they are intermediate between those of *A. cana* subsp. *viscidula* and those of *A. longiloba*, both of which occur in the vicinity. This

new species supposedly of hybrid origin does not now occur mixed with its theoretical parents, and intergradation of the kind so common in this group of species of *Artemisia* does not occur in the area.

The work reported here was sponsored by the regional research program, W-25, entitled Ecology and Improvement of Brush Infested Range Lands.

— WYOMING AGRIC. EXPER. STA., LARAMIE, WYOMING

A NEW VARIETAL COMBINATION IN OXYBAPHUS. — In a prepublication review of the writer's mss. on west-American range forbs the eagle eye of Dr. S. F. Blake has detected an improperly published new combination in *Oxybaphus,* a defect which this note assays to correct:

Oxybaphus linearis var. **subhispida** (Heimerl) Dayt., comb. nov. *Mirabilis linearis subhispida* Heimerl, Ann. Conserv. & Jard. Bot. Genève **5**: 186. 1901. *Allionia linearis subhispida* Standl., Contrib. U. S. Nat. Herb. **12**: 342. 1909. *A. gausapoides* Standl., Contrib. U. S. Nat. Herb. **13**: 406. 1911. *A. subhispida* (Heimerl) Standl., Contrib. U. S. Nat. Herb. **16**: 120. 1913.

This plant's hairiness seems to rate hardly more than varietal relationship to typical *Oxybaphus linearis* (Pursh) Robins. (syn. *Allionia linearis* Pursh), as Heimerl indicated when he first described this entity. The generic status of *Oxybaphus* seems now to be widely recognized; its fruit and floral characters suggest a closer relationship to *Mirabilis* than to *Allionia*. *O. linearis* var. *subhispida* occupies rather dry to medium moist sandy or gravelly soils but sometimes also heavy clays and moist rich loams, from "desert" areas to the ponderosa pine type, often partly protected such as under mesquite bushes or canyon cottonwoods. Its range, not too well known, is from extreme southwestern Colorado, New Mexico and western Texas south into Mexico. As a rule it is eaten little, if at all, by domestic livestock. However, there appear to be some exceptions. It is reported as common on shale banks about 9,000 feet on the Montezuma National Forest (southwestern Colorado) and there eaten with some relish by cattle. — WILLIAM A. DAYTON, ARLINGTON, VA.

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